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Attorney Docket No.: 3464-003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	LYDECKER, George *et al.*
Serial No.	:	08/850,996
Filing Date	:	May 5, 1997
Title	:	RECORDING AND PLAYBACK CONTROL SYSTEM
Examiner	:	MEI, X.
Group Art Unit	:	2644

Assistant Commissioner for Patents
Washington, D.C. 20231

TRANSMITTAL OF APPEAL BRIEF

SIR:

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Grace M. Espinal
Name of person mailing correspondence

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Signature

February 20, 2002
Date of Signature

Respectfully submitted:

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APPEAL BRIEF

1. *REAL PARTY IN INTEREST*

The Assignee of the subject application, and therefore the real party in interest is Time Warner Music Group, Inc.

2. *RELATED APPEALS AND INTERFERENCES*

None

3. *STATUS OF CLAIMS*

Claims 1-14 and 21-38 stand rejected and are on appeal.

Claims 15-17 were withdrawn from consideration[1].

Claims 18-20 were cancelled.

No claims have been allowed.

4. *STATUS OF AMENDMENTS*

The amendment filed on November 13, 2001 has been apparently entered.

5. *SUMMARY OF THE INVENTION*

The subject application pertains to a recording and playback system, and preferably, as it relates to the present application, to a playback system adapted to receive a high density recording medium, such as a CD, and replay a program therefrom. Typically, music is recorded in a studio having its own recording or original acoustic characteristics. The medium is then sold or otherwise distributed potentially to millions of customers, who then use their individual playback systems to replay the program. Each player has its individual characteristics and it is disposed at a specific site, each site having its own playback environment with its own acoustic characteristics as well. Thus, each CD is played back under essentially unknown acoustic conditions and therefore the producer of the recording has no control over what the customer hears when replaying a program.

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[1]In the Advisory Action mailed January 30, 2002, the Examiner indicated *inter alia* that claims 15-17 are rejected. However in the Office Actions mailed January 4, 2001 and May 22, 2001 the Examiner indicated that claims 15-17 were withdrawn from consideration. Accordingly, these claims are not presently on appeal.

This problem is resolved in the present invention by determining the original acoustic characteristics of the environment where the recording is performed, i.e., the recording site, recording control signals corresponding to these original acoustic characteristics on the medium together with the musical program, and, at the customer's site, detecting the control signals and adjusting the operation of the player in accordance with the control signals. Additionally, the acoustic characteristics of the playback encironment are also taken in counteraction. For example, typically, the player at the customer site may include gain/phase circuits, delay/reveberation circuits and/or equalizer circuits, as shown in Fig. 2. These circuits receive respective control signals and match or compensate for the acoustic characteristics of both the recording environment and the playback environment.

Two different schemes are provided in the application for receiving the acoustic characteristics of the playback environment,. In a first scheme, the customer enters certain information, such as the size of the room where the player is located, the number and location of speakers, and so forth. The acoustic characteristics of the playback environment are then determined from this information. According to a second scheme, the player has its own microphone and is adapted to generate a test signal and detect the audio signals resulting from said test signals. The parameters associated with these detected audio signals are then used to determine the acoustic characteristics of the playback environment.

To summarize, the present invention pertains to four separates aspects:

A. It provides a playback system that receives a medium with a recording including a program and control signals indicative of the acoustic characteristics of the

recording environment, and having a demultiplexer that separates the control signals, and circuitry that receives said control signals and adjusts the manner in which the program is replayed in accordance with said control signals.

B. It provides a playback system as described in A above with the circuitry also receiving information regarding the acoustic characteristics of playback environment, whereby the operation of the playback system is also adjusted by the latter acoustic characteristics.

C. It provides a playback system as described in B above wherein information regarding the playback environment is received externally, e.g., from the customer(open loop control).

D. It provides a playback system in accordance with B above wherein the information regarding the playback environment is generated internally based on test signals (closed loop control).

6. *ISSUES*

A. Are claims 1-4, 13, 21-25, 30, 30-38 anticipated by the Davis reference?

B. Are claims 5-6, 28-29 obvious over the Davis reference?

C. Are claims 7-12 and 26-27 obvious over the Davis reference in view of the Begault reference?

7. *GROUPING OF THE CLAIMS*

In the opinion of the Applicants, the claims can be grouped as follows:

Group I incorporating aspect A of the invention as discussed above and including

claims 1, 3, 4, 5, 6, 13, 21, 22, 23, 30, 31, 32, 33 and 34.

Group II incorporating aspect B of the invention as discussed above and including claim 24.

Group III incorporating aspect C of the invention as discussed above and including claims 2, 25, 35 and 36.

Group IV incorporating aspect D of the invention and including claims 7, 8, 9, 10, 11, 12, 14, 26, 27, 28, 29, 37 and 38.

8. *ARGUMENT*

A. The Prior Art Relied on by the Examiner

1. The Davis reference:

The Davis references disclose a complex system which detects what it terms to be a sound field. The sound field is recorded using several microphones, and the sound spectrum from each microphone is combined into sub-bands. The content of each sub-band from several microphones is then combined, encoded and recorded together with control signals that indicate how to decode and separate the different sub-bands.

Thus, the reference presents a unique algorithm for encoding multi-channel sounds. However, this reference has nothing to do with the present invention. In the present invention, the recording of the sound itself is standard and the result is a standard sound recording. More importantly, in the present invention the acoustic characteristics of the recording environment are determined, and control signals are generated to indicate these characteristics. As discussed above, in some aspects of

the invention, the characteristics of the playback environment are also determined and the two sets of characteristics are used together to determine how to play the recorded program back. There is nothing in this reference that discusses this feature of the invention. The present invention contains many other features which are also missing from the Davis references. For example, claim 1 recites specific circuitry which is operated in accordance with the acoustic characteristics discussed above, including gain circuits, delay circuits, and so on. There is nothing in the cited Davis references that perform in this manner. In addition, it should be noted that in Davis the control signals are used to define the various sub-bands and having nothing to do with the actual characteristics of the recording environment but with the manner in which the sole-bands are defined.

2. The Begault reference:

The Begault reference discloses an apparatus for producing pseudo-stereophonic sound from monaural audio signal using a plurality of speakers disposed around a listener in a recording room. Two microphones are provided in the person's ear and the sounds from these microphones are re-recorded. Importantly this equipment is operated in an anechoic room, e.g., a room in which no echos are produced. Begault fails to provide any more relevant disclosure then the Davis reference. It certainly does not disclose or even suggest recording a program and control signals indicative of the acoustic characteristics of the recording environment and then using these control signals at the playback site to compensate the audio signals to be played.

Moreover the Begault reference fails to provide any means for determining or feeding acoustic characteristics of the playback environment. In fact special structures are required by this reference to render the room anechoic. These structures have the effect of suppressing the acoustic characteristics of the room. Hence Begault fails to disclose any means for determining the characteristics of the recording environment as well.

B. ISSUE NO. 1- CLAIMS 1-4, 13, 21-25 AND 30-38 ARE NOT ANTICIPATED BY THE DAVIS REFERENCE

(1) The Claims of Group I-1, 3-4, 13, 21-23, 30-33 are not anticipated

It is Hornbook law that a claim cannot be anticipated by a reference unless the reference discloses every one of its limitations.

Each claim of group I recites (directly, or through a respective dependence) one or more elements which are not found in the Davis reference. For example, claim 1 recites a playback system with an demultiplexer for retrieving audio data and acoustic control data. Claim 1 further recites that the control data provides "a predetermined number N of inputs to gain and phase circuits, delay and reverberation circuits, equalizer circuits, and gain/attenuation circuits, said gain/attenuation circuits connected to output to a second predetermined number M of summation channels". Finally, claim 1 further recites that the audio data feeding serially through the gain and phase circuits, delay and reverberation circuits, and equalizer circuits and that the operation of said gain and phase circuits, said delay and reverberation circuits and said equalizer circuits is adjusted in accordance with said acoustic control data to replay said audio data by

recreating said recording or original acoustic environment.

In his rejection, the Examiner recognizes that the Davis reference discloses an encoder/decoder for multidimensional sound fields generating sub-band data and a steering control signal. The steering control signal conveys the levels of the spectral components from all the steered channels, or the apparent directions or net directional vectors of the spectral components of all the steered channels. (See Davis Patent No. 5,909,664, col. 9, lines 54-61). It is respectfully submitted that the steering control signals define how the sub-bands are to be decoded however these control signals do not contain N parameters to be used for the various audio circuits recited by claim 1. Nor do these signals contain or are related to the acoustical characteristics at the original or recording site.

The Examiner states in his rejection directed to anticipation that the multichannel sub-band signal and the steering signal "represents [sic] the various components of the sound quality characteristics any information about the acoustic characteristics such as frequency range, amplitude control, harmonic amplitude and phase etc. with regard to the original sound signal." (See Office Action of May 22, 2001, pages 2 and 3). This statement has nothing to do with the question at hand. The issue to be determined for anticipation is whether the Davis reference discloses to one skilled in the art an audio data that can be converted into a standard audio signal and a separate control signal indicative of the acoustic characteristics of the recording site. Clearly the Davis reference does not disclose these elements and hence there is no anticipation. The steering control signal is nothing more or less than a steering signal. It does not contain any information about the acoustic characteristics of the recording

site. This point is amply illustrated by the fact that in Davis the multichannel subband signal must be decoded using the steering control signal to generate sounds. On the other hand, in the present invention, the audio data can be converted into audio signals without the control signal (although the resulting audio signals may be distorted somewhat).

In his anticipation rejection the Examiner goes on to state that "the various audio processing circuit [sic] as claimed would be inherently included for reconstructing the composite audio-information signal back to its original form." The Applicants respectfully submit that there is nothing in Davis that would lead one to this conclusion. More specifically, there is nothing in Davis to indicate that a steering control signal indicative of the spectral content of the sub-bands is used in any manner at all to affect the operation of any other audio circuits.

Thus, claim 1 and claims 3-4, 13 dependent on claim 1 are not anticipated by Davis.

Independent claim 21 calls for a playback system for reproducing audio signals from a data stream containing audio and control data, said control data being related to characteristics of the original acoustic environment in which said audio data has been recorded, said system comprising:

a demultiplexer arranged to separate said audio and control data; and

a playback circuit adapted to convert said audio data into audio signals at a local playback site in accordance with said control data to recreate the original acoustic environment.

As discussed above, Davis does not disclose a demultiplexer that separates the

audio and control data, or a playback circuit that converts the audio data into audio signals at a local playback site using the control data to recreate the original acoustic environment. In Davis, there is no separate audio data that is readily converted into audio signals.

Thus, claim 21 and claims 22, 23 and 30 dependent on claim 21 are not anticipated by the Davis reference.

Claim 31 is similar to claim 21 except that it specifies that the data signals are compensated. Therefore claim 31 and claim 32 dependent on claim 31 are not anticipated by the Davis reference for the same reasons as claim 21.

Claim 33 is similar to claim 21 and in addition it recites that the control data includes N control signals to generate audio signals over a predetermined number of channels M. It is submitted that this claim is not anticipated by the Davis reference for the same reasons as claim 21.

(2). Claims 2, 24, 25 and 34-38 are not anticipated by the Davis reference

Each of these claims is dependent on one of the claims discussed above in par. (1). Hence they are not anticipated for the reasons stated. In addition, each of these claims belongs to one of the groups II-IV because they pertain to other aspects of the invention as well.

For example, claim 2 of group III and dependent on claim 1, recites a listener input signals providing information indicative of the local characteristics of the listener (i.e. playback) site. There nothing in Davis similar to such signals. Thus claims 2 and

the other claims of Group III (claims 25, 35, 36-all pertaining to the aspect of the invention wherein information regarding the local, listener or playback environment is received externally, e.g., from the customer(open loop control) are not anticipated by Davis.

Claim 24 of group II and dependent on claim 21 recites an adapter circuit that changes the control data in accordance with local data indicative of the physical conditions associated with the replay. This claim covers circuitry also receiving information regarding the acoustic characteristics of playback environment, whereby the operation of the playback system is also affected by the latter acoustic characteristics. No such circuitry is disclosed in Davis and accordingly the claim is not anticipated.

Claim 7 recites a loop closing subsystem including precision microphones that receive returned information from test signals used to provide corrections for parameters in the playback system. These features cover the closed loop control aspect of the invention. The Davis reference does not disclose such a close loop control. Accordingly claim 7 is not anticipated by Davis. Similarly, the other claims of group IV, including claims 37 and 38 are not anticipated by Davis on the same grounds as claim 7.

C. ISSUE No. 2- CLAIMS 5-6 AND 28-29 ARE NOT OBVIOUS IN VIEW OF THE DAVIS REFERENCE

The Examiner has taken the position that claims 5-6 and 28-29 are obvious over

the Davis reference. These claims pertain to a noise suppression circuit. The Examiner takes the position that it would be obvious to use noise suppression in Davis reference. The Applicants respectfully submit that there is nothing in the Davis reference or anywhere else in the record that discloses any noise suppression circuitry or suggests that such a circuitry is beneficial to the apparatus disclosed by the Davis reference. Moreover, the Examiner failed to provide any suggestion that would lead a person skilled in the art to modify Davis by adding noise suppression circuits thereto.

D. ISSUE No. 3- CLAIMS 7-12 AND 26, 27 ARE NOT OBVIOUS OVER THE DAVIS REFERENCE IN COMBINATION WITH THE BEGAULT REFERENCE

In order to show that a claim is obvious, the Examiner must show that the cited references when considered together would teach to a person skilled in the art all the features of the claim and that a person skilled in the art would combine them in accordance with specific suggestions in the art to obtain the claimed subject matter.

These claims all belong to group IV. As discussed above, the claims of group IV pertain to the aspects of the invention wherein means are used to determine the acoustic characteristics of the playback environment, and these characteristics are used to control the manner in which the recorded program is played.

The Davis reference is completely silent on these aspects of the invention. The Begault reference is similarly deficient. More specifically, Begault discloses performing a specific procedure that takes place in a room in which echos are suppressed and hence the acoustic characteristics of the room cannot be recorded. Moreover, as discussed above, the procedure is used to re-record the program. Thus, there is

nothing in this reference that teaches the determination of the acoustical characteristics of either the original (recording) environment or the listener (playback) environment.

Thus the two references cited by the Examiner when considered together fail to disclose all the features of the respective claims, specifically the features related to the the acoustic characteristics of either the original (recording) environment, or the listener (playback) environment. Moreover, neither reference teaches the use of a closed loop control as defined and claimed.

Furthermore, a person skilled in the art would have no reason to combine the two references in the manner suggested by the Examiner because Begault teaches how to process a monaural signal into a stereo signal. In Davis a stereo signal is recorded in the first place, and accordingly, there is no reason to use the teachings of Begault at all. In this sense, Begault teaches away from the present invention and a person skilled in the art faced with the problems solved by the present invention would simply ignore Begault.

In summary, the two references when combined fail to disclose the elements of elements 7-12 and 26, 27 and the Examiner has failed to identify any teaching that would suggest this combination to a person skilled in the art. If anything, the second reference teaches away from the suggested combinations. Accordingly, the Examiner has failed to make out a prima facie case of obviousness.

9. CONCLUSION

The subject invention pertains to an audio playback apparatus having four distinct aspects. First, the present invention is a playback system that can be used to detect standard signals on a recording media and play these standard signals back as sounds. No such recording media is disclosed in the primary Davis reference.

Second, the control signals are added to the sound signals on the recording media to allow the playback system to replay the sounds in a manner that simulates the acoustic characteristics of the recording environment.

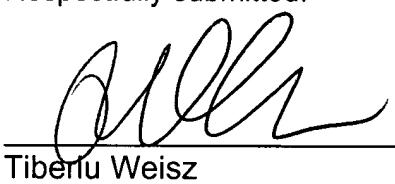
Third the playback system uses information descriptive of the local or playback environment and combines this information with the information from the recording site to obtain a much higher quality replay. No such system is disclosed in the prior art.

Finally, for the latter feature two different control loops are proposed, neither of which is found in the prior art.

Accordingly, it is respectfully submitted that the Examiner has failed to present a prima facie case that these claims are either anticipated by or obvious in view of the cited references.

Dated: February 19, 2002
New York, New York

Respectfully submitted:



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10. *APPENDIX-THE CLAIMS*

1. A playback system for reproducing audio data and reading acoustic control data from a recording medium, said acoustic control data including information related to the characteristics of the original acoustic environment associated with the production of said recording media, comprising:

a demultiplexer for retrieving audio data and acoustic control data,

said acoustic control data providing a predetermined number N of inputs to

gain and phase circuits,

delay and reverberation circuits,

equalizer circuits, and

gain/attenuation circuits,

said gain/attenuation circuits connected to output to a second predetermined number M of summation channels,

said audio data feeding serially through said

gain and phase circuits,

delay and reverberation circuits, and

equalizer circuits;

wherein the operation of said gain and phase circuits, said delay and reverberation circuits and said equalizer circuits is adjusted in accordance with said acoustic control data to replay said audio data by recreating said original acoustic environment.

2. The playback system for reproducing audio data and reading acoustic control data of claim 1 wherein said audio signals are replayed at a listener site, further comprising a listener input circuit connected to provide signals, said listener input signals providing information indicative of the characteristics of the local playback site.

3. The playback system for reproducing audio data and reading acoustic control data of claim 1 further comprising a player type register providing a signal indicative of parameters of the recording medium to said gain and phase circuits, delay and reverberation circuits, and equalizer circuits to provide information indicative of the characteristics of a player for the media. a player type register providing a signal

indicative of parameters of the recording medium to said gain and phase circuits, delay and reverberation circuits, and equalizer circuits to provide information indicative of the characteristics of a player for said recording medium.

4. The playback system for reproducing audio data and reading acoustic control data of claim 2 further comprising a player type register providing a signal indicative of parameters of the recording medium to said gain and phase circuits, delay and reverberation circuits, and equalizer circuits to provide information indicative of the characteristics of a player for said recording medium.

5. The playback system for reproducing audio data and reading acoustic control data of claim 3 wherein said player type register is adapted to provide information to active noise cancellation apparatus.

6. Thus playback system for reproducing audio data and reading acoustic control data of claim 4 wherein said player type register is adapted to provide information to active noise cancellation apparatus.

7. The playback system for reproducing audio data and reading acoustic control data of claim 1, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programmable delay,

a second generator for test signals,

precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback system.

8. The playback system for reproducing audio data and reading acoustic control data of claim 2, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programmable delay,

a second generator for test signals,

precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback system.

9. The playback system for reproducing audio data and reading acoustic control data of claim 3, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programmable delay,

a second generator for test signals,

precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback system.

10. The playback system for reproducing audio data and reading acoustic control data of claim 4, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programable delay,

a second generator for test signals,

a precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback system.

11. The playback system for reproducing audio data and reading acoustic control data of claim 5, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programmable delay,

a second generator for test signals,

precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback system.

12. The playback system for reproducing audio data and reading acoustic control data fo claim 6, further comprising, a loop closing subsystem interfaced to said playback system comprising

a programmable delay,

a second generator for test signals,

precision microphones to receive returned information from said test signals,

connections to provide parameter corrections to parameters of said playback systems.

13. The playback system for reproducing audio data and reading acoustic control data of claim 1, wherein said playback system further comprises a metadata display system.

14. The playback system for reproducing audio data and reading acoustic control data of claim 7, wherein said playback system further comprises a metadata display system.

21. A playback system for reproducing audio signals from a data stream containing audio and control data, said control data being related to characteristics present in the original acoustic environment in which said audio data has been recorded, said system comprising:

a demultiplexer arranged to separate said audio and control data; and

a playback circuit adapted to convert said audio data into audio signals at a local playback site in accordance with said control data to recreate the original acoustic environment.

22. The playback system of claim 21 wherein said playback circuit includes at least one of a gain control, phase control and position control circuit responsive to said control data.

23. The playback system of claim 21 wherein said playback circuit includes one of delay circuit, reverberation circuit and equalizer circuit responsive to said control data

24. The playback system of claim 21 wherein said playback circuit includes an adapter circuit that changes said control data in accordance with local data indicative of physical conditions associated with the replay.

25. The playback system of claim 24 further comprising a customer input interface that receives local data from a customer.

26. The playback system of claim 24 further comprising a closed loop back circuit adapted to automatically determine said local data.

27. The playback system of claim 26 wherein said closed loop back circuit includes a speaker arranged to receive and play an acoustic test signal and a microphone arranged to sense a response corresponding to said acoustic test signal.

28. The playback system of claim 21 further comprising a noise sensor generating a noise indication signal indicative of ambient noise and noise correction generator that generates noise compensation signals, said control circuit assembly being responsive to said noise compensation signals to generate audio signals compensated for the noise.

29. The playback system of claim 28 wherein said noise correction generator is adapted to receive said audio data and generates said compensation signals in accordance with said audio data.

30. The playback system of claim 21 further comprising a visual display, said control circuit assembly providing display signals for said display indicative of the control data.

31. A playback system for reproducing audio signals from a data stream containing audio and control data with information indicative of recording conditions in an original acoustic environment during the recording of said audio signals, said system comprising:

a demultiplexer arranged to separate said audio and control data; and

a playback circuit adapted to convert said audio data into audio signals in accordance with said control data to compensate said audio signals and recreate said original acoustic environment.

32. The playback system of claim 31 wherein the audio data is recorded on M channels and the control data includes a plurality of parameters related to said M channels and wherein said control circuit assembly is adapted to fold said M channels into two stereo channels by manipulating said parameters.

33. A playback system for generating sounds from a medium recorded in an acoustical environment, said medium including musical program data and acoustic control data, said musical program data corresponding to a musical program, said acoustic control data being indicative of N control signals affecting the manner in which said musical program is to be played and including data related to characteristics of said acoustic environment, said playback system comprising:

a demultiplexer for selectively retrieving said musical program data and said control data;

a playback circuit including a gain control and a phase control circuit, said playback circuit receiving said musical program data and operating on said musical program in accordance with said N control signals to generate audio signals over a predetermined number of channels M, wherein said audio signals are played in a replay

acoustic environment to recreate said musical program approximately as recorded in said original acoustic environment.

34. The system of claim 33 wherein said playback circuit includes a delay circuit, a reverberation circuit and a variable gain control circuit, said playback circuit receiving said acoustic control data and adjusting the operation of said circuits in accordance with said acoustic control data.

35. The system of claim 33 further comprising a customer input circuit connected to provide customer control signals from a customer, said playback circuit being adapted to alter at least some of said plurality N of control inputs in accordance with said customer input control signals.

36. The system of claim 35 wherein said customer input circuit is adapted to receive signals indicative of said replay acoustic environment.

37. The system of claim 33 further comprising a closed loop control circuit adapted to determine the acoustic characteristics of said replay acoustic environment, said replay circuit being adapted to modify said N control circuits in accordance with said replay.

38. The system of claim 37 wherein said closed loop control circuit includes a test generator adapted to generate test signals, and a microphone adapted to sense sounds in said replay environment corresponding to said test signals, said microphone generating a microphone output indicative of said replay characteristics.